UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,564	09/03/2003	Adriana Dumitras	18602-08204	6437

61520 7590 10/01/2007

APPLE/FENWICK
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

EXAMINER	
FINDLEY, CHRISTOPHER G	
ART UNIT	**PAPER NUMBER**
2621	

MAIL DATE	DELIVERY MODE
10/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/655,564	DUMITRAS ET AL.	
	Examiner	Art Unit	
	Christopher Findley	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 7/02/2007 have been fully considered but they are not persuasive.

Re claim 1, the Applicant argues that "Chang does not disclose 'determining a motion angle for each motion vector,' as claimed. Chang merely discloses detecting moving objects within a frame by identifying areas of a frame with motion vectors different than the non-moving areas of the frame (see page 17, lines 4-6). This detection merely compares motion vectors to a predetermined threshold value to eliminate areas of the frame where motion vectors are below the predetermined threshold value (see page 17, line 8)." (Applicants Remarks filed 7/02/2007, page 7, line 21, through page 8, line 2) However, the Examiner respectfully disagrees. The threshold noted by the Applicant serves to identify regions of contiguous blocks of motion, wherein the object motion is then extracted by applying global motion compensation to find the motion of the local object (Chang: page 16, lines 3-7 and Equation (4)). Since the motion vectors of an object are represented in a 2-dimensional (x, y) plane, it is inherent that each vector consists of a magnitude and direction, and the direction may be represented by an angle expressed as a geometric function of the x and y components.

The Applicant also argues, re claim 1, that "Chang fails to disclose 'identifying at least two largest regions in each frame having motion vectors with substantially similar motion angles,' as claimed." (Applicant's Remarks filed 7/02/2007, page 8, lines 10-12) However, the Examiner respectfully disagrees. Chang utilizes a first threshold to

identify regions of contiguous blocks of motion. A local motion vector for each region of contiguous motion blocks (identified as an object) is then calculated (Chang: page 16, lines 9-16). Next, the magnitudes of the local motion vectors are compared to a second threshold in order to delete small false objects (Chang: page 16, lines 17-20)). If the motion of the object is not substantially similar for the blocks within the object, many vectors would offset each other and lower the magnitude of the representative local motion vector for the object, and, therefore, the object would be deleted because the magnitude of the representative local motion vector would not meet the second threshold. Therefore, only objects made up of blocks with substantially similar motion vector orientations would remain.

Applicant's further arguments are based on the assumed deficiency discussed above, and consequently are not persuasive.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (PCT/US97/08266) in view of Osberger (US 6670963 B2).

Re claim 1, Chang discloses a method of detecting at least one of a pan and a zoom in a video sequence, comprising: selecting a set of frames from a video sequence

(In order to perform the analysis outlined in Chang it is inherent that a set of video frames are selected from a video sequence); determining a set of motion vectors for each frame in the set of frames (Chang: page 15, lines 10-12, each motion vector associated with the B and P frames contained in the shot are decoded); determining a motion angle for each motion vector (Chang: page 16, lines 3-6, the motion vectors of an object are represented in a 2-dimensional (x, y) plane, wherein it is inherent that each vector consists of a magnitude and direction, and the direction may be represented by an angle expressed as a geometric function of the x and y components); identifying at least two largest regions in each frame having motion vectors with substantially similar motion angles (Chang: page 11, lines 10-15, The moving object(s) and the background constitute at least two regions, which are determined by their respective motion vector orientations; page 16, lines 3-4, each extracted object may be expressed by a global motion vector, indicating that the object is composed of several blocks with substantially similar motion angles/direction). Chang does not explicitly disclose determining percentages of each frame covered by the at least two largest regions; determining a statistical measure of the motion angles for at least one of the two largest regions; and comparing the percentages and statistical measure to threshold values to identify at least one of a pan and a zoom in the video sequence. However, Osberger discloses a visual attention model, wherein motion vectors are calculated and used to determine pan, tilt, zoom, and rotate (Osberger: column 7, lines 23-28), and an estimate of the amount of motion in a scene is obtained by taking the mth percentile of the camera motion compensated motion vector map (Osberger:

column 7, lines 61-64). Since both Chang and Osberger relate to determining pan and zoom in a video sequence, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the statistical motion analysis of Osberger with the indexing and editing methods of Chang in order to provide an improved visual attention model of the type having spatial features to generate a spatial importance map and having a temporal importance map combined with the spatial importance map to produce an overall importance map for a frame (Osberger: column 8, lines 58-67), which would provide a more comprehensive technique for indexing video with key content browsing (Chang: page 6, lines 2-6). The combined method of Chang and Osberger has all of the features of claim 1.

Re claim 2, the combined method of Chang and Osberger discloses that the step of selecting a set of video frames from a video sequence further comprises: identifying a scene cut between two frames in the video sequence (Chang: Fig. 1, "SCENE CUT DETECTION" in PARSING section 110); and responsive to the identification of a scene cut, selecting a set of video frames from the video sequence that includes all the frames in the video sequence up to and including a frame just before the scene cut (Chang: column 2, lines 5-8).

Re claim 3, the combined method of Chang and Osberger discloses that frame differences and motion information are used to identify a scene cut (Chang: column 4, lines 45-61).

Re claim 4, the combined method of Chang and Osberger discloses that the motion angles are computed in one from the group of coordinate systems consisting of

polar, Cartesian, spherical and cylindrical coordinate systems (Chang: Fig. 4 is a vector diagram, which serves to explain global and local motion. The x and y coordinates are contained in a Cartesian coordinate system and used in Equation (1) on page 14. Line 17 of page 14 states, "(x,y) is the coordinate of a macroblock in the current frame.").

Re claim 5, the combined method of Chang and Osberger discloses that the percentages of each flame covered by the at least two largest regions are determined from the number of pixels in each region as a percentage of the total number of pixels in a frame (Osberger: column 7, line 64, through column 8, line 9, pixel spacing and screen size are factored into the calculations).

Re claim 6, the combined method of Chang and Osberger discloses that the statistical measure is a variance (Osberger: column3, lines 50-55, variance is used in the calculations).

Claim 7 recites the corresponding system for implementing the method of claim 1, and, therefore, has been analyzed and rejected with respect to claim 1 above.

Claim 8 has been analyzed and rejected with respect to claim 2 above.

Claim 9 has been analyzed and rejected with respect to claim 3 above.

Claim 10 has been analyzed and rejected with respect to claim 4 above.

Claim 11 has been analyzed and rejected with respect to claim 5 above.

Claim 12 has been analyzed and rejected with respect to claim 6 above.

Claim 13 recites the corresponding computer readable medium stored thereon a computer program for executing the method of claim 1, and, therefore, has been analyzed and rejected with respect to claim 1 above.

Claim 14 has been analyzed and rejected with respect to claim 2 above.

Claim 15 has been analyzed and rejected with respect to claim 3 above.

Re claim 16, the combined method of Chang and Osberger discloses a majority of the features of claim 16, as discussed above regarding claims 1 and 13, but does not specifically disclose the use of polar coordinates in the motion vector analysis. However, the combined method of Chang and Osberger does use Cartesian coordinates (see fig. 4). The Examiner takes Official Notice that one of ordinary skill in the art would have found it obvious to convert the Cartesian motion vector representation to polar coordinates as a personal preference for visual and/or mathematical representation. Polar coordinates provide no advantage over Cartesian coordinates and are simply a different way of representing the same data.

Claim 17 has been analyzed and rejected with respect to claim 5 above.

Claim 18 has been analyzed and rejected with respect to claim 6 above.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Findley whose telephone number is (571) 270-1199. The examiner can normally be reached on Monday-Friday 7:30am-5pm, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Findley/